

AMENDMENTS TO THE CLAIMS:

1. (Cancelled)
2. (Currently Amended) The spinal implant assembly of claim ~~1~~ 26 wherein the metallic matrix comprises a titanium, titanium aluminum alloy, zirconium or niobium or a mixture thereof.
3. (Original) The spinal implant assembly of claim 2 wherein the reinforcing component is selected from the group consisting of: TiC, TiB₂, TiN, TiAl, WC, BC₄, BN, diamond, ZrO₂, Al₂O₃, and mixtures thereof.
4. (Currently Amended) The spinal implant assembly of claim ~~1~~ 20 wherein the reinforcing component is a ceramic.
5. (Currently Amended) The spinal implant assembly of claim ~~1~~ 20 wherein the reinforcing component is an intermetallic material.
6. (Currently Amended) The spinal implant assembly of claim ~~1~~ 26 wherein the metallic matrix composite includes between about 1 wt % and about 90 wt % of the reinforcing component, based upon the total weight of the metallic matrix composite.
7. (Original) The spinal implant assembly of claim 6 wherein the metallic matrix composite includes between about 20 wt % and about 80-wt % of the reinforcing component, based upon the total weight of the metallic matrix composite.
8. (Original) The spinal implant assembly of claim 7 wherein the metallic matrix composite includes between about 10 wt % and about 30-wt % of the reinforcing component, based upon the total weight of the metallic matrix composite.

9. (Currently Amended) The spinal implant assembly of claim + 20 wherein the first surface of the first plate has a porosity of greater than about 5%.
10. (Original) The spinal implant assembly of claim 9 wherein the first surface of the first plate has a porosity of greater than about 10%.
11. (Original) The spinal implant assembly of claim 9 wherein the metallic matrix material is impregnated with one or more therapeutic agents.
12. (Original) The spinal implant assembly of claim 9 wherein the metallic matrix material is impregnated with a bone growth-inducing agent.
13. (Original) The spinal implant assembly of claim 11 wherein the metallic matrix material is impregnated with a bone growth-inducing agent.
14. (Currently Amended) The spinal implant assembly of claim + 29 wherein at least one of the first and second metal matrix composites is selected to exhibit a surface hardness of at least 20 Rc.
15. (Currently Amended) The spinal implant assembly of claim + 29 wherein at least one of the first and second metal matrix composites is selected to exhibit a surface hardness of at least about 45 Rc.
16. (Currently Amended) The spinal implant assembly of claim + 29 wherein the metal matrix material has a density of greater than about 80%.
17. (Original) The spinal implant assembly of claim 16 wherein the metal matrix material has a density of greater than about 90%.
18. (Currently Amended) The spinal implant assembly of claim + 29 wherein the

reinforcing component is homogeneously dispersed throughout the metallic matrix material.

19. (Withdrawn and Currently Amended) The spinal implant assembly of claim 1 29 wherein the reinforcing component is inhomogeneously dispersed throughout the metallic matrix material.

20. (Currently Amended) ~~The spinal implant assembly of claim 1~~ A spinal implant assembly for insertion between adjacent first and second vertebrae, said implant comprising:
a first plate including a first surface configured to engage the first vertebra and an opposite second surface, and
a second plate including a third surface configured to engage the second vertebra and an opposite fourth surface having a bearing portion configured to engage the second surface of the first plate, wherein said first and second plates comprise a metal matrix composite including a metallic matrix and a reinforcing component dispersed within the metallic matrix; and
wherein the first plate exhibits a concentrate gradient of the reinforcing component decreasing from the first surface to the second surface.

21. (Currently Amended) The spinal implant assembly of claim 1 26 wherein the second surface of the first plate comprises a convex protuberance and the fourth surface of the second plate comprises a concave receptacle to receive the convex protuberance.

22. (Currently Amended) The spinal implant assembly of claim 1 26 wherein the first plate and the second plate are configured to allow translational and rotational movement of the first plate relative to the second plate.

23. (Currently Amended) The spinal implant assembly of claim 1 26 wherein the first surface comprises bone-engaging structures.

24. (Original) The spinal implant assembly of claim 23 wherein the bone engaging structures include one or more of: ridges, teeth, grooves, rails, and wire mesh.

25. (Currently Amended) The spinal implant assembly of claim 1 ~~26~~ comprising a flange extending at an angle oblique to the first surface and positioned to overlay bone tissue when the first surface engages the first vertebra.

26. (Currently Amended) ~~The spinal implant assembly of claim 1~~ A spinal implant assembly for insertion between adjacent first and second vertebrae, said implant comprising:
a first plate including a first surface configured to engage the first vertebra and an opposite second surface, and
a second plate including a third surface configured to engage the second vertebra and an opposite fourth surface having a bearing portion configured to engage the second surface of the first plate, wherein said first and second plates comprise a metal matrix composite including a metallic matrix and a reinforcing component dispersed within the metallic matrix; and
wherein the first plate or the second plate comprises a metal matrix composite ~~that~~ exhibits having a bimodal porosity.

27. (Currently Amended) The spinal implant assembly of claim 26 wherein the first surface of the first plate or the third surface of the second plate ~~that exhibits~~ has a bimodal porosity.

28. (Original) The spinal implant assembly of claim 26 wherein the metal matrix composite comprises two or more layers including a sintered layer over an integrated porous layer.

29. (Currently Amended) ~~The spinal implant assembly of claim 1~~ A spinal implant assembly for insertion between adjacent first and second vertebrae, said implant comprising:
a first plate including a first surface configured to engage the first vertebra and an opposite second surface, and
a second plate including a third surface configured to engage the second vertebra and an opposite fourth surface having a bearing portion configured to engage the second surface of the

first plate, wherein said first and second plates comprise a metal matrix composite including a metallic matrix and a reinforcing component dispersed within the metallic matrix; and

wherein the first plate comprises a first metal matrix composite and the second plate comprises a second metal matrix composite different from the first metal matrix composite.

30. (Original) The spinal implant assembly of claim 29 wherein the first metal matrix composite includes a first reinforcing material and the second metal matrix composite includes a second reinforcing material different from the first reinforcing material.

31. (Original) The spinal implant assembly of claim 29 wherein the first metal matrix composite has a first porosity and the second metal matrix composite has a second porosity different from the first porosity.

32. (Original) The spinal implant assembly of claim 29 wherein the first metal matrix composite has a first porosity and the second metal matrix composite is about 100% dense.

33. (Currently Amended) ~~The spinal implant assembly of claim 1,~~ A spinal implant assembly for insertion between adjacent first and second vertebrae, said implant comprising:

a first plate including a first surface configured to engage the first vertebra and an opposite second surface, and

a second plate including a third surface configured to engage the second vertebra and an opposite fourth surface having a bearing portion configured to engage the second surface of the first plate, wherein said first and second plates comprise a metal matrix composite including a metallic matrix and a reinforcing component dispersed within the metallic matrix; and

wherein the first surface of the first plate has a bimodal porous structure.

34. (Withdrawn and Currently Amended) ~~A spinal implant assembly for insertion between adjacent first and second vertebrae, said implant comprising: The spinal implant assembly of claim 29 wherein a first plate including a first surface configured to engage the first vertebra and an opposite~~ the second surface having of the first plate has a first recess, and a

~~second plate including a third surface configured to engage the second vertebra and a opposite the fourth surface having of the second plate a second recess opposing the first recess on the first plate; and comprises an articulating element disposed between engaged with the first recess of the first plate and the second recess, wherein the articulating element and the first and second plates each comprise a metal matrix composite comprising a metallic matrix and a reinforcing component dispersed with in the metallic matrix.~~

35. (Withdrawn) The spinal implant assembly of claim 34 wherein the articulating element is spherical, cylindrical, elliptical, disk shaped, or wafer shaped.

36. (Withdrawn) The spinal implant assembly of claim 34 wherein the metallic matrix composite includes between about 1 wt % and about 90 wt % of the reinforcing component, based upon the total weight of the metallic matrix composite.

37. (Withdrawn) The spinal implant assembly of claim 36 wherein the metallic matrix composite includes between about 20 wt % and about 80-wt % of the reinforcing component, based upon the total weight of the metallic matrix composite.

38. (Withdrawn and Currently Amended) The spinal implant assembly of claim 34 wherein the ~~first~~ second plate and the articulating element are a one-piece structure.

39. (Withdrawn and Currently Amended) The spinal implant assembly of claim 34 wherein the ~~first~~ second plate and the articulating element are non integral.

40. (Withdrawn) The spinal implant assembly of claim 34 wherein the metallic matrix composite includes between about 10 wt % and about 30 wt % of the reinforcing component, based upon the total weight of the metallic matrix composite.

41. (Withdrawn) The spinal implant assembly of claim 34 wherein the first surface of the first plate has a porosity of greater than about 5%.

42. (Withdrawn) The spinal implant assembly of claim 34 wherein the first surface of the first plate has a porosity of greater than about 10%.

43. (Withdrawn and Currently Amended) The spinal implant assembly of claim 41 34 wherein the metallic matrix material is impregnated with one or more therapeutic agents.

44.-53. (Cancelled)

54. (Currently Amended) The ~~spinal implant~~ device of claim ~~53~~ 59 wherein the first metallic matrix comprises a titanium, titanium aluminum alloy, zirconium, niobium, or a mixture thereof.

55. (Currently Amended) The device of claim ~~53~~ 59 wherein the first reinforcing component is selected from the group consisting of: TiC, TiB₂, TiN, TiAl, WC, BC₄, BN, diamond, ZrO₂, Al₂O₃, and mixtures thereof.

56. (Currently Amended) The device of claim ~~53~~ 59 wherein the first metallic matrix composite includes between about 1 wt % and about 90 wt % of the first reinforcing component, based upon the total weight of the metallic matrix composite.

57. (Original) The device of claim 56 wherein the first metallic matrix composite includes between about 20 wt % and about 80 wt % of the first reinforcing component, based upon the total weight of the metallic matrix composite.

58. (Original) The device of claim 57 wherein the first metallic matrix composite includes between about 10 wt % and about 30-wt % of the first reinforcing component, based upon the total weight of the metallic matrix composite.

59. (Currently Amended) ~~The device of claim 53 comprising~~ A medical device

comprising: a disc prosthesis comprising a first layer including a first metal matrix composite comprising a metal matrix and a first reinforcing component dispersed within the matrix, and a second layer including a second metal matrix composite.

60. (Original) The device of claim 59 wherein the second metal matrix composite is different from the first metal matrix composite.

61. (Original) The device of claim 59 wherein the second metal matrix composite includes a second reinforcing component different from the first reinforcing component.

62. (Original) The device of claim 59 wherein the first layer is configured to have a first porosity and the second layer is configured to have a second porosity different from the first porosity.

63. (Original) The device of claim 59 comprising one or more therapeutic agents.

64. (Currently Amended) The device of claim ~~53~~ 59 comprising a sintered layer overlaying the first layer.

65.-96. (Cancelled)